REMARKS/ARGUMENTS

Favorable reconsideration of this application, in view of the above amendment and the following remarks, is respectfully requested.

Claims 1-14, 16-20 and 22-26 are pending in this application. By this Amendment, Claims 1, 12, 22 and 26 are amended; and no claims are canceled or added herewith. It is respectfully submitted that no new matter is added by this Amendment.

In the outstanding Office Action, Claims 1-14 and 22-26 were rejected under 35 U.S.C. § 101; Claims 1, 16 and 22 were rejected on the ground of non-statutory obviousness-type double patenting; Claims 1-14 and 16-20 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,883,997 to Kim; and Claims 22-26 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and further in view of "MPEG-4 and Rate-Distortion-Based-Shape Coding Techniques" to Katsaggelos.

With respect to the rejection of the claims under 35 U.S.C. § 101, Claims 1 and 12 are amended by the present amendment to recite displaying an object based on the object region data. Withdrawal of the rejection under 35 U.S.C. § 101 is respectfully requested.

With respect to the rejection on the ground of non-statutory obviousness-type double patenting, a Terminal Disclaimer is filed herewith. Accordingly, withdrawal of the rejection for double patenting is respectfully requested.

The applied art does not teach or suggest associating each of the vertexes in each of the at least three frames with each of the same vertexes in an adjacent frame and obtaining trajectories of positions of the same vertexes in X and Y coordinates, in each of the trajectories, the same vertexes are arranged through the at least three frames based on the time-series variation of the at least three frames, as claimed in Claim 1 and as similarly recited in the remaining independent claims.

It is an object of one or more embodiments of the present invention to generate object region data which relates to an object region in at least three frames of a moving picture and does not require a large amount of data. Please see at least pages 4 and 5 of the present specification. According to embodiments of the present invention, a polygon approximating a contour of the object region in each of the at least three frames is generated, the polygon having vertexes; each of the vertexes in each of the at least three frames are associated with each of the same vertexes in an adjacent frame; trajectories of positions of the same vertexes in X and Y coordinates are obtained, in each of the trajectories the same vertexes are arranged through the at least three frames based on the time-series variation of the at least three frames; the object region data comprising an approximate function data expressing the trajectories is generated; and the object is displayed based on the object region data. Thus, the region for the desired object in the moving picture is described in a small amount of data, making it possible to facilitate object generation or data processing. See at least page 53 of the present specification.

In contrast to the present invention, there is no teaching or suggestion in Kim to obtain trajectories of positions of the same vertexes in X and Y coordinates, and in each of the trajectories the same vertexes are arranged through the at least three frames based on the time-series variation of the at least three frames, and to generate the object region data comprising an approximate function data expressing the trajectories.

The Office Action asserts that Kim teaches obtaining trajectories, each of the trajectories linking the same vertexes through the frames for each video frame sequence of digital data i.e., use of a global motion vector, GMV, to determine the amount of shift of pixels of the current and the predicted contours, col. 3, lines 30-60. However, according to col. 3, lines 30 to 60, from the vertex selection block 201, current vertex information representing positions of the current vertices are provided to a switch 226. In the meantime,

the ME & MC block 280 finds centroids for the current and a previous contours of the object by averaging the coordinates of all the pixel positions on the respective contours and computes a motion vector, i.e., global motion vector (GMV) denoting a spatial displacement between the centroids. The centroid of the current contour is calculated based on the input contour image data while the centroid of the previous contour is obtained based on previous contour image data retrieved from a memory 270, wherein the previous contour image data represents positions of contour pixels and vertices constituting the previous contour.

Thereafter, a predicted contour is generated by overlapping the previous contour onto the current contour. In other words, at the ME & MC block 280, the predicted contour is provided by shifting all the pixels on the previous contour by GMV such that the centroid of the predicted contour coincides with that of the current contour. The previous vertices are also shifted by GMV at the MC & ME block 280 and provided as motion compensated vertices. From the ME & MC blocks 280, GMV is provided to a multiplexer (MUX) 290 via a line L20; predicted contour image data representing positions of the contour pixels of the predicted contour, to a secondary sampling block 230 via a line L30; and motion compensated vertex information representing positions of the motion compensated vertices, to the vertex mapping block 220 and the secondary sampling block 230 via a line L40.

Therefore, in Kim, the global motion vector (GMV) denote the spatial displacement between the centroids for the current and the previous contours of the object and thus does not correspond to the trajectories of positions of the same vertexes in X and Y coordinates, in each of the trajectories the same vertexes are arranged through the at least three frames based on the time-series variation of the at least three frames.

The Office Action states that Kim teaches generating the object region data, the object region data comprising an approximate function data expressing the trajectories i.e., using a line to approximate the trajectories, in col. 5-6, lines 64-5, and col. 6, lines 48-50. However,

according to col. 5-6, lines 64-5, at the primary sampling block 210, the current contour is divided into a plurality of primary contour segments by the selected, i.e., predicted vertices. Each primary contour segment in the inter-mode represents a portion of the current contour connecting two adjacent predicted vertices and contour pixels disposed therebetween and is approximated by a primary line segment joining the two adjacent predicted vertices. Thereafter, a set of primary errors is obtained in an identical manner as in the intra-mode.

The primary line segment joining the two adjacent predicted vertices relates to the vertexes in the same frame and does not correspond to the object region data comprising an approximate function data expressing the trajectories in at least three frames.

Further, Kim teaches performing motion compensation to generate intra/inter-coded data. In the inter-frame coding, the current contour is coded based on the previous contour. Thus, Kim merely teaches a data compression using similarities between the successive image frames. However, Kim does not teach that trajectories of positions of the same vertexes in X and Y coordinates are obtained, in each of the trajectories the same vertexes are arranged through the at least three frames based on the time-series variation of the at least three frames; the object region data comprising an approximate function data expressing the trajectories is generated; and the object is displayed based on the object region data.

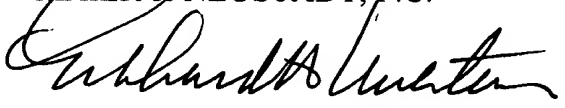
As noted above, Kim fails to disclose or suggest the features of the independent claims. Because Katsaggelos is not relied upon to provide the features identified as deficient in Kim discussed above, it is not substantially addressed herewith. Accordingly, withdrawal of the rejection of the claims under 35 U.S.C. § 103(a) is respectfully requested.

Consequently, for the reasons discussed in detail above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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